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Digital Object Identifier 10.1109/AFRCON.1992.624479 AbstractPlus | Full Text: PDF(344 KB) IEEE CNF Rights and Permissions 6. A dynamical redirection approach to enhancing Mobile IP with fault tolera systems Jenn-Wei Lin; Jichiang Tsai; Chin-Yu Huang; Global Telecommunications Conference, 2002. GLOBECOM '02. IEEE Volume 1, 17-21 Nov. 2002 Page(s):646 - 650 vol.1 AbstractPlus | Full Text: PDF(375 KB) IEEE CNF Rights and Permissions 7. Reservation-based session routing for broadband communication netwo **QoS** requirements Yeh, C.-H.; Varvarigos, E.A.; Bertsekas, D.P.; Mouftah, H.T.; Information Networking, 2001. Proceedings. 15th International Conference on 31 Jan.-2 Feb. 2001 Page(s):593 - 600 Digital Object Identifier 10.1109/ICOIN.2001.905516 AbstractPlus | Full Text: PDF(888 KB) IEEE CNF Rights and Permissions 8. Bottleneck discovery in large-scale networks based on the expected valu Elmasry, G.F.; McCann, C.J.; Military Communications Conference, 2003. MILCOM 2003. IEEE Volume 1, 13-16 Oct. 2003 Page(s):405 - 410 Vol.1 Digital Object Identifier 10.1109/MILCOM.2003.1290137 AbstractPlus | Full Text: PDF(1610 KB) IEEE CNF Rights and Permissions 9. Application Layer Routing Options for efficient data transport over the In-Jingsong Zhang; McLeod, R.D.; Electrical and Computer Engineering, 2002. IEEE CCECE 2002. Canadian Co Volume 3, 12-15 May 2002 Page(s):1472 - 1476 vol.3 Digital Object Identifier 10.1109/CCECE.2002.1012970 AbstractPlus | Full Text: PDF(368 KB) IEEE CNF Rights and Permissions 10. Sprint's evolution to broadband ISDN Lisowski, B.; Reingold, L.; Communications Magazine, IEEE Volume 30, Issue 8, Aug. 1992 Page(s):28 - 30 Digital Object Identifier 10.1109/35.149613 AbstractPlus | Full Text: PDF(864 KB) IEEE JNL Rights and Permissions 11. CTCP: a transparent centralized TCP/IP architecture for network security Hsu, F.-H.; Chiueh, T.; Computer Security Applications Conference, 2004. 20th Annual 6-10 Dec. 2004 Page(s):335 - 344 Digital Object Identifier 10.1109/CSAC.2004.14 AbstractPlus | Full Text: PDF(208 KB) IEEE CNF Rights and Permissions 12. Using signatures to improve URL routing Genova, Z.; Christensen, K.J.; Performance, Computing, and Communications Conference, 2002. 21st IEEE 3-5 April 2002 Page(s):45 - 52 Digital Object Identifier 10.1109/IPCCC.2002.995135

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13. Direct Web switch routing with state migration, TCP masquerade, and co rewriting Ying-Dar Lin; Ping-Tsai Tsai; Po-Ching Lin; Ching-Ming Tien; Global Telecommunications Conference, 2003. GLOBECOM '03. IEEE Volume 7, 1-5 Dec. 2003 Page(s):3663 - 3667 vol.7 Digital Object Identifier 10.1109/GLOCOM.2003.1258917  AbstractPlus   Full Text: PDF(438 KB) IEEE CNF Rights and Permissions
14. Enhanced forwarding from the previous care-of address (EFWD) for fast mobile IPv6 Gwon, Y.; Yegin, A.; Wireless Communications and Networking Conference, 2004. WCNC. 2004 IE Volume 2, 21-25 March 2004 Page(s):861 - 866 Vol.2 AbstractPlus   Full Text: PDF(408 KB) IEEE CNF
Rights and Permissions  15. Enforcing resource sharing agreements among distributed server cluster Tao Zhao; Karamcheti, V.;  Parallel and Distributed Processing Symposium., Proceedings International, IF Abstracts and CD-ROM  15-19 April 2002 Page(s):23 - 32
Digital Object Identifier 10.1109/IPDPS.2002.1015497 <u>AbstractPlus</u>   Full Text: <u>PDF(</u> 368 KB) IEEE CNF <u>Rights and Permissions</u>
16. Optical interconnection technology in switches, routers and optical cross Jonsson, M.;  Parallel Processing Workshops, 2001. International Conference on 3-7 Sept. 2001 Page(s):319 - 326  Digital Object Identifier 10.1109/ICPPW.2001.951968  AbstractPlus   Full Text: PDF(608 KB) IEEE CNF  Rights and Permissions

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The state of the art in locally distributed Web-server systems

Valeria Cardellini, Emiliano Casalicchio, Michele Colajanni, Philip S. Yu June 2002 ACM Computing Surveys (CSUR), Volume 34 Issue 2

**Publisher: ACM Press** 

Full text available: R pdf(1.41 MB)

Additional Information: full citation, abstract, references, citings, index terms

The overall increase in traffic on the World Wide Web is augmenting user-perceived response times from popular Web sites, especially in conjunction with special events. System platforms that do not replicate information content cannot provide the needed scalability to handle large traffic volumes and to match rapid and dramatic changes in the number of clients. The need to improve the performance of Web-based services has produced a variety of novel content delivery architectures. This article w ...

Keywords: Client/server, World Wide Web, cluster-based architectures, dispatching algorithms, distributed systems, load balancing, routing mechanisms

2 Modeling methodology a: Simulation of large scale networks III: loosely-coordinated, distributed, packet-level simulation of large-scale networks



Boleslaw K. Szymanski, Yu Liu

December 2003 Proceedings of the 35th conference on Winter simulation: driving innovation

Publisher: Winter Simulation Conference

Full text available: pdf(424.74 KB) Additional Information: full citation, abstract, references

The complexity and dynamics of the Internet is driving the demand for scalable and efficient network simulation. In this paper, we describe a novel approach that partitions the networks into domains and simulation time into intervals. Each domain is simulated independently of and concurrently with the others with only local domain information over the same simulated time interval. At the end of each interval, global routing information, packet delays and drop rates for each inter-domain flow ...

3 IP switching—ATM under IP

Peter Newman, Greg Minshall, Thomas L. Lvon April 1998 IEEE/ACM Transactions on Networking (TON), Volume 6 Issue 2

Publisher: IEEE Press



Full text available: Ddf(154.32 KB) Additional Information: full citation, references, citings, index terms

Keywords: Internet protocol, asynchronous transfer mode, broadband communication, communication system control, data communication, packet switching, protocols

Network simulation: Genesis: a system for large-scale parallel network simulation

Boleslaw K. Szymanski, Adnan Saifee, Anand Sastry, Yu Liu, Kiran Madnani

May 2002 Proceedings of the sixteenth workshop on Parallel and distributed simulation

Publisher: IEEE Computer Society Full text available: pdf(832.16 KB)

Publisher Site

Additional Information: full citation, abstract, references, citings

We describe a novel approach to scalability and efficiency of parallel network simulation that partitions the networks into domains and simulation time into intervals. Each domain is simulated independently of and concurrently with the others over the same simulation time interval. At the end of each interval, packet delays and drop rates for each interdomain flow are exchanged between domain simulators. The simulators iterate over the same time interval until the exchanged information converge ...

Keywords: Parallel, Network, Simulation, Scalable, Partition, Domain, Synchronization

5 A unifying methodology for handovers of heterogeneous connections in wireless ATM





networks C.-K. Toh

January 1997 ACM SIGCOMM Computer Communication Review, Volume 27 Issue 1

Publisher: ACM Press

Full text available: pdf(1.40 MB) Additional Information: full citation, abstract, citings, index terms

The aim of Wireless ATM is to provide multi-media services to mobile users. While existing research on Wireless ATM are focussed on handovers of unicast connections, handovers of multicast connections have not been investigated. While conventional multicast join and leave operations occur over the same path, this is not the case during mobile host migrations in a Wireless ATM network. In this paper, we reveal how handovers of multicast connections can be achieved in a manner irrespective of whet ...

Keywords: handovers, multicasting, switch discovery and wireless ATM

Special feature: Report on a working session on security in wireless ad hoc networks



Levente Buttyán, Jean-Pierre Hubaux

January 2003 ACM SIGMOBILE Mobile Computing and Communications Review, Volume 7 Issue 1

Publisher: ACM Press

Full text available: pdf(2.50 MB)

Additional Information: full citation, references, citings

7 SOS: secure overlay services

Angelos D. Keromytis, Vishal Misra, Dan Rubenstein

August 2002 ACM SIGCOMM Computer Communication Review, Proceedings of the 2002 conference on Applications, technologies, architectures, and protocols for computer communications SIGCOMM '02, Volume 32 Issue 4

Publisher: ACM Press

Additional Information: full citation, abstract, references, citings, index Full text available: pdf(210.90 KB) terms

Denial of service (DoS) attacks continue to threaten the reliability of networking systems. Previous approaches for protecting networks from DoS attacks are reactive in that they wait for an attack to be launched before taking appropriate measures to protect the network. This leaves the door open for other attacks that use more sophisticated methods to mask their traffic. We propose an architecture called Secure Overlay Services (SOS) that proactively prevents DoS attacks, geared toward supportin ...

Keywords: denial of service attacks, network security, overlay networks

8 Pricing in computer networks: reshaping the research agenda

S. Shenker, D. Clark, D. Estrin, S. Herzog

April 1996 ACM SIGCOMM Computer Communication Review, Volume 26 Issue 2

Publisher: ACM Press

Full text available: pdf(2.16 MB) Additional Information: full citation, abstract, citings, index terms

As the Internet makes the transition from research testbed to commercial enterprise, the topic of pricing in computer networks has suddenly attracted great attention. Much of the discussion in the network design community and the popular press centers on the usagebased vs. flat pricing debate. The more academic literature has largely focused on devising optimal pricing policies; achieving optimal welfare requires charging marginal congestion costs for usage. In this paper we critique thi ...

9 Routing and handoff in the edge mobility architecture

Alan O'Neill, M. Scott Corson, George Tsirtsis

October 2000 ACM SIGMOBILE Mobile Computing and Communications Review, Volume 4 Issue 4

**Publisher: ACM Press** 

Full text available: pdf(1.75 MB) Additional Information: full citation, abstract, index terms

We consider a future IP network architecture in which the core topology is fixed but where the hosts at the edge of the network may be mobile, as is the case in cellular networks. Within this architecture, Mobile-Enhanced Routing (MER) protocols are used to support the prefix-routed requirements of the fixed Internet, along with the movement of IP addresses allocated to mobile nodes. We outline a specific components for the support of such edge mobility (EMA:MER) that offers fixed/mobile IP netw ...

10 DOS protection: Using graphic turing tests to counter automated DDoS attacks

against web servers

William G. Morein, Angelos Stavrou, Debra L. Cook, Angelos D. Keromytis, Vishal Misra, Dan Rubenstein

October 2003 Proceedings of the 10th ACM conference on Computer and communications security

Publisher: ACM Press

Additional Information: full citation, abstract, references, citings, index Full text available: Tpdf(256.83 KB)

We present WebSOS, a novel overlay-based architecture that provides guaranteed access to a web server that is targeted by a denial of service (DoS) attack. Our approach exploits two key characteristics of the web environment: its design around a human-centric interface, and the extensibility inherent in many browsers through downloadable "applets." We guarantee access to a web server for a large number of previously unknown users, without requiring pre-existing trust relationships between ...

Keywords: Java, graphic turing tests, web proxies

11 Interposed request routing for scalable network storage

February 2002 ACM Transactions on Computer Systems (TOCS), Volume 20 Issue 1

Publisher: ACM Press

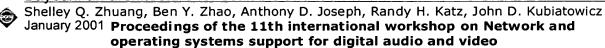
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This paper explores interposed request routing in Slice, a new storage system architecture for high-speed networks incorporating network-attached block storage. Slice interposes a request switching filter---called a  $\mu proxy$ ---along each client's network path to the storage service (e.g., in a network adapter or switch). The  $\mu$ proxy intercepts request traffic and distributes it across a server ensemble. We propose request routing schemes for I/O and file service traffic, and explore th ...

**Keywords**: Content switch, file server, network file system, network storage, request redirection, service virtualization

12 Bayeux: an architecture for scalable and fault-tolerant wide-area data dissemination



Publisher: ACM Press

Full text available: pdf(272.26 KB)

Additional Information: full citation, abstract, references, citings, index terms

The demand for streaming multimedia applications is growing at an incr edible rate. In this paper, we propose Bayeux, an efficient application-level multicast system that scales to arbitrarily large receiver groups while tolerating failures in routers and network links. Bayeux also includes specific mechanisms for load-balancing across replicate root nodes and more efficient bandwidth consumption. Our simulation results indicate that Bayeux maintains these properties while keeping transmi ...

13 The deflection self-routing Banyan network: a large-scale ATM switch using the fully adaptive self-routing and its performance analyses

Jae-Hyun Park, Hyunsoo Yoon, Heung-Kyu Lee

August 1999 IEEE/ACM Transactions on Networking (TON), Volume 7 Issue 4

Publisher: IEEE Press

Full text available: pdf(418.66 KB) Additional Information: full citation, references, index terms

**Keywords**: ATM switch, algecraic formalism, deflection self-routing Banyan network, performance evaluation, topological properties, unbuffered Banyan network

14 High-speed policy-based packet forwarding using efficient multi-dimensional range



T. V. Lakshman, D. Stiliadis

October 1998 ACM SIGCOMM Computer Communication Review , Proceedings of the ACM SIGCOMM '98 conference on Applications, technologies, architectures, and protocols for computer communication SIGCOMM

**'98**, Volume 28 Issue 4

Publisher: ACM Press







Additional Information: full citation, abstract, references, citings, index Full text available: Ddf(1.82 MB)

The ability to provide differentiated services to users with widely varying requirements is becoming increasingly important, and Internet Service Providers would like to provide these differentiated services using the same shared network infrastructure. The key mechanism, that enables differentiation in a connectionless network, is the packet classification function that parses the headers of the packets, and after determining their context, classifies them based on administrative policies or re ...

# 15 A layered naming architecture for the internet

Hari Balakrishnan, Karthik Lakshminarayanan, Sylvia Ratnasamy, Scott Shenker, Ion Stoica, Michael Walfish

August 2004 ACM SIGCOMM Computer Communication Review, Proceedings of the 2004 conference on Applications, technologies, architectures, and protocols for computer communications SIGCOMM '04, Volume 34 Issue 4

Publisher: ACM Press

Additional Information: full citation, abstract, references, citings, index Full text available: pdf(110.95 KB) terms

Currently the Internet has only one level of name resolution, DNS, which converts userlevel domain names into IP addresses. In this paper we borrow liberally from the literature to argue that there should be three levels of name resolution: from user-level descriptors to service identifiers; from service identifiers to endpoint identifiers; and from endpoint identifiers to IP addresses. These additional levels of naming and resolution (1) allow services and data to be first class Internet objec ...

**Keywords**: distributed hash tables, global identifiers, internet architecture, middleboxes, name resolution, naming

# 16 IP-based protocols for mobile internetworking

John Ioannidis, Dan Duchamp, Gerald Q. Maguire

August 1991 ACM SIGCOMM Computer Communication Review, Proceedings of the conference on Communications architecture & protocols SIGCOMM '91, Volume 21 Issue 4

Publisher: ACM Press

Full text available: pdf(1.29 MB) Additional Information: full citation, references, citings, index terms

# 17 Stateful distributed interposition

John Reumann, Kang G. Shin

February 2004 ACM Transactions on Computer Systems (TOCS), Volume 22 Issue 1

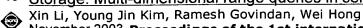
Publisher: ACM Press

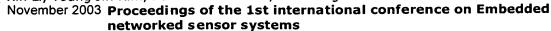
Full text available: Top pdf(833.84 KB) Additional Information: full citation, abstract, references, index terms

Interposition-based system enhancements for multitiered servers are difficult to build because important system context is typically lost at application and machine boundaries. For example, resource quotas and user identities do not propagate easily between cooperating services that execute on different hosts or that communicate with each other via intermediary services. Application-transparent system enhancement is difficult to achieve when such context information is obscured by complex servic ...

Keywords: Distributed computing, component services, distributed context, multitiered services, operating systems, server consolidation

18 Storage: Multi-dimensional range queries in sensor networks





Publisher: ACM Press

Additional Information: full citation, abstract, references, citings, index Full text available: pdf(331.43 KB)

In many sensor networks, data or events are named by attributes. Many of these attributes have scalar values, so one natural way to query events of interest is to use a multi-dimensional range query. An example is: "List all events whose temperature lies between 50° and 60°, and whose light levels lie between 10 and 15." Such queries are useful for correlating events occurring within the network. In this paper, we describe the design of a distributed index that scalably supports ...

Keywords: DIM, multi-dimensional range queries

19 Cluster communication protocols for parallel-programming systems

Kees Verstoep, Raoul A. F. Bhoedjang, Tim Rühl, Henri E. Bal, Rutger F. H. Hofman August 2004 ACM Transactions on Computer Systems (TOCS), Volume 22 Issue 3

Publisher: ACM Press

Full text available: pdf(1.29 MB) Additional Information: full citation, abstract, references, index terms

Clusters of workstations are a popular platform for high-performance computing. For many parallel applications, efficient use of a fast interconnection network is essential for good performance. Several modern System Area Networks include programmable network interfaces that can be tailored to perform protocol tasks that otherwise would need to be done by the host processors. Finding the right trade-off between protocol processing at the host and the network interface is difficult in general. In ...

Keywords: Clusters, parallel-programming systems, system area networks

20 Evaluation and metrics: Optimization aspects in network simulation

Jamal Siadat, Robert J. Walker, Cameron Kiddle

March 2006 Proceedings of the 5th international conference on Aspect-oriented software development AOSD '06

Publisher: ACM Press

Full text available: 🔁 pdf(179.38 KB) Additional Information: full citation, abstract, references, index terms

A primary goal of AOSD in the context of systems software has been to permit improved modularity without significantly degrading performance. Optimizations represent important crosscutting concerns in this context but also a significant challenge due to their fine-grained nature. This paper investigates how well the current state-of-the-art in AOSD can support such optimization aspects, via a case study involving an optimized network simulator, IP-TN. Duplication of optimizations achieved via lo ...

**Keywords**: AspectC++, IP-TN, evaluation, fine-grained join points, modularity, network simulation, optimization, performance

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### Title

CTCP: a transparent centralized TCP/IP architecture for **network** security.

## **Conference information**

Proceedings. 20th Annual Computer Security Applications Conference, Tucson, AZ, USA, 6-10 Dec. 2004.

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Proceedings. 20th Annual Computer Security Applications Conference, 2004, p. 335-44, 39 refs, pp. xxiv+450, ISBN: 0-7695-2252-1.

Publisher: IEEE Comput. Soc, Los Alamitos, CA, USA.

### Author(s)

Hsu-F-H, Chiueh-T.

### **Author affiliation**

Hsu, F.-H., Chiueh, T., Dept. of Comput. Sci., State Univ. of New York, Stony Brook, NY, USA.

### Abstract

Many nework security problems can be solved in a centralized TCP (CTCP) architecture, in which an organization's edge router transparently proxies every TCP connection between an internal host and an external host on the Internet. This paper describes the design, implementation, and evaluation of a CTCP router prototype that is built on the Linux kernel. By redirecting all packets targeting at nonexistent or nonopen-to-public ports to a CTCP socket which pretends to be the original receivers, CTCP could confirm the real identification of the packet sources, collect suspicious traffic from them, and make an illusion that the scanned target ports are all open, thus renders port scanning an useless effort. Under CTCP architecture, external hosts only interacts with a secure CTCP router; therefore, any OS fingerprinting attempt and DoS/DDoS attack targeting at TCP/IP implementation bugs could be thwarted. Moreover, By further checking traffic originating from confirmed scanners, the CTCP router can actually identify buffer overflow attack traffic. Finally, the CTCP router solves the TCP connection hijacking problem by introducing an additional check on the sequence number filed of incoming packets. Despite providing a rich variety of protection, the CTCP architecture does not incur much overhead. On a 1.1 GHz Pentium-3 machine with gigabit Ethernet interfaces, the throughput of the CTCP router is 420.3 Mbits/sec, whereas the throughput of a generic Linux router on the same hardware is only 409.1 Mbits/sec.

### **Descriptors**

INTERNET; LINUX; LOPEN-SYSTEMS; LICENMUNICATION-NETWORK-ROUTING;

TELECOMMUNICATION-TRAFFIC; TRANSPORT-PROTOCOLS.

# **Classification codes**

B6210L Computer-communications\*;

B6150P Communication-network-design-planning-and-routing;

B6150M Protocols;

C5640 Protocols\*;

C6150N Distributed-systems-software;

CO310D Computer-installation-management.

### Keywords

transparent-centralized-TCP/IP-architecture; **network-security**; Internet; CTCP-router-prototype; Linux-kernel; OS-fingerprinting; 1.1-GHz-Pentium-3-machine; gigabit-Ethernet-interface.

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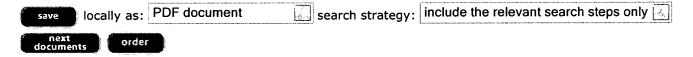
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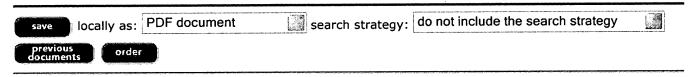
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### **Title**

Survivable wireless ATM network architecture.

### **Conference information**

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# **Abstract**

Amidst the rapid growth of wireless broadband networks, little attention has been paid to wireless **network** survivability issues. We propose a survivable wireless ATM **network** architecture that allows it to survive from a single base station failure condition, by **redirecting** a failure cell's traffic via its six neighboring cells. We present two failure-handling schemes for the proposed architecture. The first scheme is a bandwidth reservation (BR) scheme that is targeted at achieving high survivability by reserving bandwidths at appropriate locations in the **network**. The second scheme is a best-effort (BE) scheme that does not perform any reservation, and is targeted at achieving high bandwidth utilization. Simulation results show that the BR scheme achieves good survivability as expected. On the other hand, the BE scheme provides better utilization while having slightly lower average survivability. The decrease in average survivability for the BE scheme is not tremendous, largely due to its flexibility in the use of spare bandwidths from neighboring cells when a failure occurs. However, the BE scheme requires more frequent update messages between the switches in order to update each other about the amount of bandwidth that they could provide for failure-handling. We have also considered important

issues, such as switchover time and data integrity, for our proposed schemes.

### **Descriptors**

ASYNCHRONOUS-TRANSFER-MODE; E BANDWIDTH-ALLOCATION; E BROADBAND-NETWORKS;

- CELLULAR-RADIO; DATA-INTEGRITY; PACKET-RADIO-NETWORKS;
- TELECOMMUNICATION-NETWORK-RELIABILITY; . TELECOMMUNICATION-NETWORK-ROUTING;
- TELECOMMUNICATION-TRAFFIC.

# **Classification codes**

B6150P Communication-network-design-planning-and-routing\*;

B6150C Communication-switching;

B6250F Mobile-radio-systems.

### **Keywords**

**survivable-wireless-ATM-network-architecture**; wireless-broadband- networks; single-base-station-failure-condition; traffic-redirection; failure-handling-schemes; bandwidth-reservation; best-effort-scheme; bandwidth-utilization; update-messages; switchover-time; data-integrity.

### **Treatment codes**

P Practical;

T Theoretical-or-mathematical.

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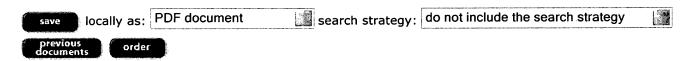
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EC: IPC: H04L12/28; H04Q7/20; H04L12/28 (+2)

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